REMARKS

Reconsideration of this application is requested. Claims 2, 3, 8 and 9 are in the case.

I. SPECIFICATION

The Examiner has required the submission of an Abstract. In response, a new Abstract is presented on a separate sheet and is based on that on the front sheet of the published PCT application. No new matter is entered.

The specification has been objected to as lacking a section entitled Brief Description of the Drawings. In response, the specification has been amended to include such a heading, together with other customary headings.

The specification has been objected to at page 2, line 16 where "general" should read "generally". In response, that change has been made, together with a further minor grammatical correction.

The specification has been objected to in that drawings are not permitted in the specification. In response, the drawings appearing within the body of the text have been removed and now appear as new Figures 7a and 7b. Proposed corrected formal drawings are presented with this response. The specification has been amended to refer to Figure 7a and 7b. No new matter is entered.

Withdrawal of the objections to the specification is now believed to be in order. Such action is respectfully requested.

II. THE 35 U.S.C. §112, SECOND PARAGRAPH, REJECTION

Claims 1-8 stand rejected under 35 U.S.C. §112, second paragraph, as allegedly indefinite for the reasons stated on page 3 of the Action. In response, claims 2 and 8 have been amended to clarify that the mixture comprises either a test compound and a receptor, or a test compound, a receptor and a ligand. Claim 2 has been amended to include "the test compound", "a test compound" providing sufficient antecedent basis.

As noted earlier, Claims 1, 4 and 5 are being canceled with prejudice. The rejections related to those claims have accordingly been rendered moot.

Withdrawal of the outstanding 35 U.S.C. §112, second paragraph, rejection is now believed to be in order. Such action is respectfully requested.

III. THE 35 U.S.C. § 102(b) REJECTION

Claims 1-6 stand rejected under 35 U.S.C. § 102(b) as allegedly anticipated by WO 97/47390 to Yager et al. That rejection is respectfully traversed.

Without conceding to the merit of the anticipation rejection, claims 1, 4, 5 and 6 have been canceled without prejudice. The anticipation rejection is therefore rendered moot as applied to those claims.

Claim 2 has been limited to the feature whereby the diffusion region within the micro fabricated conduit defines an area which is smaller than the length of the micro fabricated conduit. Yager does not disclose this feature, and therefore does not anticipate Claim 2 as amended. In Yager, the diffusion region is represented by that area of extraction channel 7 occupied by sample stream 2. Thus, the diffusion region always defines an area that is smaller than the area of cross-section and equal to the length of the micro fabricated conduit.

In light of the above, it is clear that Claim 2 is novel over Yager. Claim 3 has been amended to be dependent on Claim 2, and is novel over Yager for the same reasons as apply to Claim 2.

Withdrawal of the outstanding anticipation rejection is now believed to be in order. Such action is respectfully requested.

IV. THE OBVIOUSNESS REJECTION

Claims 7 and 8 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Yager et al. in view of U.S. Patent 6,297,061 to Wu et al. That rejection is respectfully traversed.

Without conceding to the merit of this rejection, Claim 7 has been canceled without prejudice. The obviousness rejection has accordingly been rendered moot as applied to that claim.

Claim 8 has been limited to the feature whereby a mixture is introduced into a diffusion region defining an area which is smaller than the length of the micro fabricated conduit. Yager does not render the method of Claim 8 obvious, in that Yager does not disclose or suggest introducing a liquid, and introducing a mixture comprising a test compound and a receptor, or a test compound, a receptor and a ligand into a diffusion region defining an area which is smaller than the length of the micro fabricated conduit. Moreover, the provision of such a device in which to observe differential diffusion is neither disclosed nor suggested by Wu.

In light of the above, one of ordinary skill would not have been motivated to resort to the combined disclosures of Yager and Wu. Even if one of ordinary skill did consult the combined disclosures of Yager and Wu (it is believed that would not have occurred), the present invention would not have resulted or have been rendered obvious thereby.

Absent any such motivation, it is clear to the *prima facie* case of obviousness has not been generated in this case. Reconsideration and withdrawal of the outstanding obviousness rejection are accordingly respectfully requested.

V. NEW CLAIM

New Claim 9 covers detecting diffusion on either side of the diffusion region. Basis for this new claim appears in the description at page 6, paragraph 2, page 7, paragraph 6 and page 15, paragraph 5. New Claim 9 is dependent on Claim 8 and is clearly patentably distinguished over the cited paragraph. Entry and favorable consideration of Claim 9 together with amended Claims 2, 3 and 8 are accordingly respectfully requested.

Allowance of the application is awaited

Respectfully submitted,

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Attachments: Amended Formal Drawings

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION

Please substitute the following paragraphs in the specification for corresponding paragraphs previously presented. A copy of the amended specification paragraphs showing current revisions is attached.

Page 1, line 7, insert BACKGROUND OF THE INVENTION

Page 2, please replace the paragraph beginning at line 16 with the following amended paragraph.

Microfabrication techniques are [general] generally known in the art using tools developed by the semiconductor industry to miniturise electronics, and it is possible to fabricate intricate fluid systems with channel sizes as small as a micron. These devices can be mass-produced inexpensively and are expected to soon be in widespread use for simple analytical tests. See, e.g., Ramsey, J.M. et al. (1995), "Microfabricated chemical measurement Systems," Nature Medicine 1:1093-1096; and Harrison, D.J. et al. (1993), "Micromachining a minaturized capillary electrophoresis-based chemical analysis system on a chip," Science 261:895-897.

Page 3, line 6, insert SUMMARY OF THE INVENTION

Page 7, line 10, insert BRIEF DESCRIPTION OF THE DRAWINGS

Page 7, after line 30, insert:

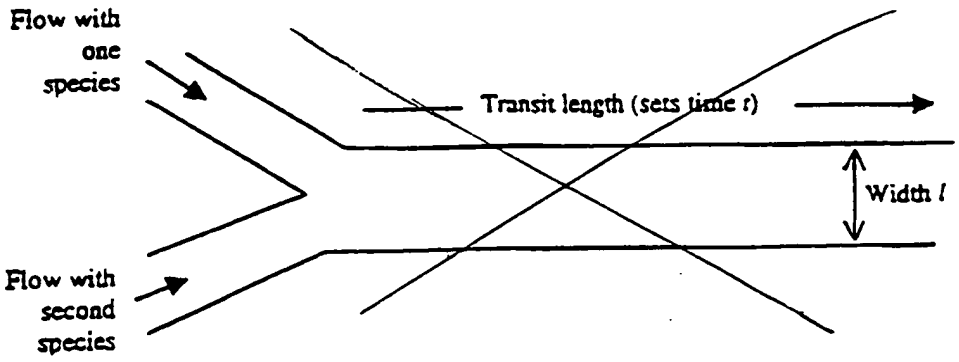
Figure 7a is a diagrammatic representation of apparatus for diffusive mixing by the contact of two flows in a mixing channel.

Figure 7b is a diagrammatic representation of apparatus for diffusive mixing by the contact of two flows in a mixing channel with allowance for parting product flows.

Page 8, before line 1, insert DETAILED DESCRIPTION OF THE INVENTION

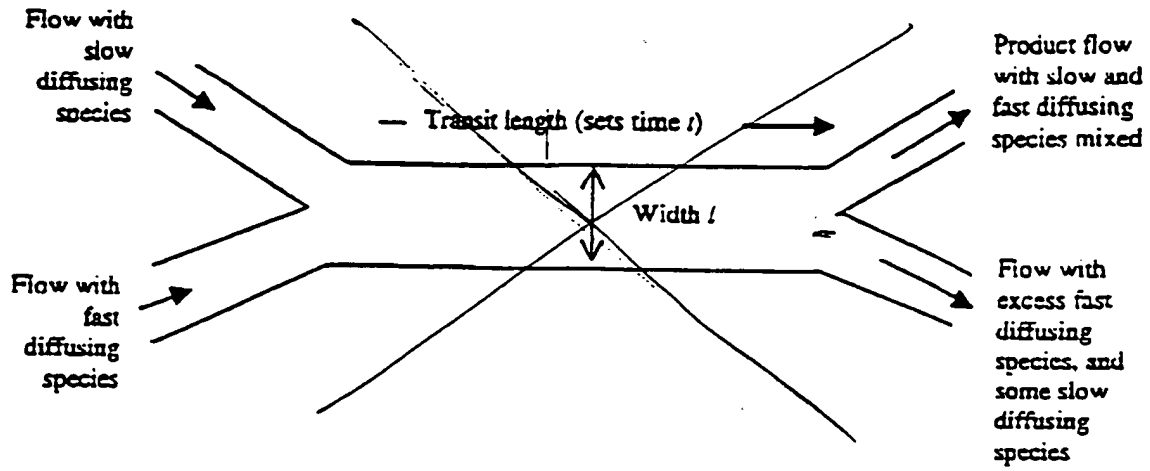
Page 13, please replace the paragraph at lines 11-18 with the following replacement paragraph.

A diagrammatic representation of apparatus for diffusive mixing by the contact of two flows in a mixing channel is shown [below] in Figure 7a with relevant features indicated.



Page 14, please replace the paragraph at lines 3-15 with the following amended paragraph.

A diagrammatic representation of apparatus for diffusive mixing by the contact of two flows in a mixing channel with allowance for parting product flows is shown [below] in Figure 7b with relevant features indicated.



IN THE CLAIMS

Please cancel claims 1, 4, 5, 6 and 7 without prejudice.

Please substitute the following amended claims for corresponding claims previously submitted.

2. (Amended) A microfabricated binding assay device comprising;

(1) an internal surface defining a microfabricated conduit,

(2) a diffusion region within the microfabricated conduit which defines an area which is smaller than [the area of cross section, or of] the length[,] of the microfabricated conduit,

(3) the microfabricated conduit having at least one inlet for introducing liquid into the microfabricated conduit and for introducing into the diffusion region a mixture comprising a test compound[,] and a receptor [and, optionally,] or a test compound, a receptor and a ligand, and

(4) an outlet for exiting liquid from the microfabricated conduit, such that in use the ability of the test compound to prevent the binding of the ligand, if present, to the receptor, or the ability of the test compound to bind the receptor, is determined by reference to the diffusion of the test compound, the receptor or the ligand out of the diffusion region.

3. (Amended) A device as claimed in claim [1] 2 further comprising a detector for detecting the presence of test compound or ligand.

8. (Amended) A method for determining in a microfabricated device the ability of a test compound to either interfere with the binding of a ligand to a receptor or to bind with a receptor, which method comprises:

(1) introducing liquid into the microfabricated conduit,

(2) introducing a mixture comprising a test compound[,] and a receptor [and, optionally,] or a test compound, a receptor and a ligand into a diffusion region of the

microfabricated conduit, the diffusion region defines an area within the microfabricated conduit which is smaller than [the area of cross section, or of] the length[,] of the microfabricated conduit, and

(3) detecting the diffusion of the test compound, or the ligand, if used, out of the diffusion region.

ABSTRACT OF THE DISCLOSURE

Assay device which is able to detect molecules which inhibit the binding of a ligand to a receptor using extremely small quantities of ligand and receptor sample. Such devices are useful in the discovery of molecules which may modulate the activity of biologically important target molecules. The device comprises a microfabricated diffusion chamber into which is introduced in mixture of a test compound, a receptor and a ligand for the receptor. Test compounds which can prevent binding of the ligand to the receptor are identified by detecting the presence of ligand outside the area of introduction of the mixture in the diffusion chamber.